

tions may have a detent, catch, or other feature to help maintain the dialyzer in place as well.

[0123] In accordance with another aspect of the invention, a bicarbonate, acid and/or other reagent supply device may be selectively associated with the dialysis unit. As described above, the dialysis unit 51 requires a supply of certain chemicals to generate dialysate and/or other materials needed for system operation. FIG. 25 shows a reagent supply 49 used to provide acid, bicarbonate and/or other materials to the dialysis unit 52. (FIG. 21 shows the reagent supply 49 attached to the acid/bicarbonate connection point 512 on the front panel 511.) The reagent supply 49 in this illustrative embodiment includes an E-prong connector 491 that is arranged to mate with the acid/bicarbonate connection point 512. As with other connections made by the user at the front panel 511, e.g., including the blood line connections at the connection point 514, the mating connectors may be color coded or otherwise marked to help ensure proper connections are made. For example, the E-prong connector 491 and the acid/bicarbonate connection point 512 may be colored orange, while the arterial line 203 and its mating connection at the connection point 514 may be colored red, and the venous line 204 and its mating connection at the connection point 514 are colored blue. Leading from the E-prong connector 491 are a bicarbonate supply line 492, a water supply line 493 and an acid supply line 494. (See FIG. 6 and the accompanying description regarding the function of these lines.) The water supply line 493 provides water to a bicarbonate supply 28 (which in this embodiment is a 750g Altracart Bicarbonate cartridge (#500750A) sold by Baxter International Inc. that includes a powdered bicarbonate material, but may be any suitable supply), which provides bicarbonate to the dialysis unit 51 via the bicarbonate supply line 492. In this embodiment, the acid supply line 494 leads to an acid bag spike 495, which may be used to pierce and draw a suitable acid from a IV-type bag or other container. In this embodiment, the acid bag spike 495 includes a spike member 495a and a pair of spring clips 495b. The spring clips 495b are joined together at center portions by a connecting bar such that the spring clips 495b and the connecting bar form an “H” shape and allow the spring clips 495b to be pivoted relative to each other when proximal ends of the spring clips 495b are squeezed toward each other. The spring clips 495b may be arranged to engage with a connector element on an acid bag (or other acid supply, not shown) so that the spike member 495a remains engaged with the bag until a user disengages the clips 495b. For example, distal ends of the clips 495b may include barbs that engage with the acid supply, and the clips may be disengaged from the acid supply by squeezing proximal ends of the clips 495b together to disengage the barb elements at the distal ends of the clips 495b from the acid supply. The acid bag spike 495 may also include a valve 495c (in this case, a pinch clamp) to open/close the line of the acid bag spike 495. In accordance with one aspect of the invention, the acid bag spike 495 may be replaced (disconnected from the acid supply line 494 at a cap connector 496) with another component, such as an acid jug straw (not shown) or other arrangement. When used with a jug straw, the cap connector 496 may be engaged with an acid jug opening such that the cap connector 496 covers the opening, like a cap. Alternatively, the jug straw can terminate in a spike, which then has the ability to penetrate a self-sealing (e.g. rubber) membrane covering the opening of the acid jug. Thus, different types of

components may be attached to the acid supply line 494 depending on the acid supply arrangement (such as a jug, bottle, bag, or other).

[0124] FIG. 26 shows a close up view of the E-prong connector 491 and the corresponding connection point 512 at the front panel 511. The E-prong connector 491 has three parallel prongs (corresponding to the bicarbonate and acid supply lines 492 and 494 and the water supply line 493) that engage with corresponding receiving holes in the connection point 512. The E-prong connector 491 and receiving holes in the connection point 512 are arranged so that a center lumen (the water supply line 493) is arranged above, or otherwise out of, a common plane of the two outer lumens (the bicarbonate and acid supply lines 492 and 494). In this way, it is ensured that the bicarbonate and acid supply lines 492 and 494 are properly connected since the E-prong connector 491 cannot be engaged with the connection point 512 unless appropriately oriented. The E-prong connector 491 includes a pair of spring tabs 491a that can be engaged with corresponding slots 512a in the connection point 512, e.g., when the prongs are properly seated in receiving holes of the connection point 512. With the tabs 491a engaged in the slots 512a, the E-prong connector 491 cannot be easily removed from the connection point 512, helping reduce the likelihood of an accidental disconnection. The E-prong connector 491 may be disconnected by pressing the tabs 491a toward each other so that barbs at the distal ends of the tabs 491a disengage from the slots 512a. The connection point 512 has similar spring tabs 512b which allow the connection point 512 to be connected to and disconnected from the front panel 511.

[0125] In accordance with another aspect of the invention, a disinfect connector (not shown) engages with connection point 512 for use during a disinfection procedure. The disinfect connector has three parallel prongs having a similar orientation as the E-prong connector 491, so that the prongs may engage with the receiving holes in connection point 512. The channels in the prongs of the disinfect connector terminate within a common chamber within the disinfect connector. Thus, during a disinfect procedure, the bicarbonate flow line, acid flow line and water flow line are all interconnected, permitting disinfection of each of these flow lines during the disinfect procedure. (This is shown as a dashed inverted “T” line at 49 in FIG. 6).

[0126] In accordance with another aspect of the invention, the blood lines 203, 204 are equipped with a connector that enables two types of connections to be made. One type of connection is a plug-in or press-in connection by which the connector can be pushed into a receiving lumen and a leakfree connection made without requiring rotation of the connector or the receiving lumen. A second type of connection is a screw-type connection by which a leakfree connection can be made by a threaded engagement of the connector with a complementary element. For example, FIGS. 27 and 28 show a perspective view and a side view of a blood line connector 202 that is used with the blood lines 203, 204 and that can engage with the blood line connection point 514 on the front panel 511. The connector 202 includes a tube connection end 202a that connects to the corresponding blood line 203, 204, and a patient access connection end 202b that is arranged to connect to both a patient access as well as the connection point 514 to establish a leakfree connection. At the patient access connection end 202b, the connector 202 includes a frustoconical mem-